

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

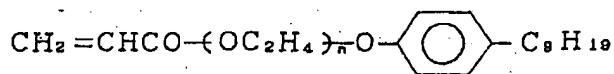
**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

BEST AVAILABLE COPY

REMARKS:

Claims 5-9 are in the case and presented for consideration.

The Examiner has rejected claims 5 and 8-9 under 35 U.S.C. §103(a) as being obvious from Japanese patent JP 05019240 to Masayuki (hereinafter JP '240). In particular, the examiner states that JP '240 teaches a liquid crystal display which comprises a polymer-dispersed liquid crystal (PDLC) cell. According to the examiner, there is a small amount of photoinitiator, and a mixture of an acrylate monomer of the formula shown below, taught to be poorly miscible with the liquid crystal, with an acrylic ester oligomer taught to be miscible, or have good compatibility, with the liquid crystal. The examiner notes that since an oligomer is a coupling of several identical monomers, it qualifies as a homolog of the monomer.



(n=3 ~ 9)

Applicant respectfully submits that newly amended claim recites limitations not taught by JP '240. Specifically, claim 5 recites a polymerizable mixture containing "two types of non-volatile reactive monomers, the first type of monomer being alkoxylated and readily miscible with a liquid crystalline material." JP '240 does not teach or suggest an alkoxylated monomer that is readily miscible, or any homolog thereof. JP '240 only teaches a readily miscible acrylic ester oligomer.

Furthermore, it is noted that JP '240 teaches away from the claimed invention. The acrylate monomer in JP '240 is alkoxylated since "n" in the formula above should be 3-9 due to ethylene oxide denaturation and the monomer acting on the threshold voltage of the PDLC. (Paragraph 14). The alkoxylated acrylate monomer of JP '240 is

taught as a poorly miscible monomer. On the other hand, claim 5 recites an alkoxyolated monomer that is readily miscible. Typically, an increase in the moles of alkoxylation increases the HLB value of a substance and the miscibility of a substance. JP '240 teaches a contrary principle.

Claims 6-7 were rejected under 35 U.S.C. §103(a) as being obvious from JP '240 in view of U.S. Patent 5,496,497 to Takiguchi et al.

Applicant respectfully submits that the rejection is impermissibly based on hindsight, since the teachings of Takiguchi '497 are both contrary to JP '240 and the claimed invention. Hindsight reconstruction of prior art is not the applicable standard for providing evidence of obviousness. *Maschinenfabrik Rieter A.G. v. Greenwood Mills*, 340 F. Supp. 1103, 173 U.S.P.Q. 605, 610, 611 (S.C. 1972). There must be a reason apparent at the time the invention was made to a person of ordinary skill in the art for applying the teaching at hand. Otherwise, use of the teaching as evidence of obviousness will entail prohibited hindsight. *In re Nomiya, Kohisa, and Matsumura*, 509 F. 2d 566, 184 U.S.P.Q. 607 (C.C.P.A. 1975).

The examiner states that "since Takiguchi et al. teaches that the specific mixture of monofunctional acrylate monomers is used in order to better control the characteristics of the obtained liquid crystal/prepolymer composition, it would have been obvious to one of ordinary skill in the art to have used the alkylacrylate and ethoxylated alkyl-phenolacrylate of Takiguchi et al. in the mixture of acrylates in the invention of Masayuki."

Applicant submits that JP '240 cannot be combined with Takiguchi '497 because the two references teach completely opposite principles according to the examiner's interpretation. JP '240 teaches the use of an ethoxylated acrylate monomer with poor

miscibility while the examiner cites to Takiguichi '497 for teaching a similar ethoxylated acrylate monomer with good miscibility.

In particular, the examiner refers to an acrylate monomer (6) as a specific member of the family of acrylate monomers (7) that has good miscibility. The examiner states that the ethoxylated alkyl-phenolacrylate family of acrylate monomers of formula (8) is listed as being a suitable one like (7). The examiner also states that a specific ethoxylated alkyl-phenolacrylate M4 is 5.2 which is less than monomer (5). It is therefore presumed that the examiner is drawing the conclusion that formulas (7) and (8) have good miscibility. However, formula (8) of the Takiguchi '497 patent, shown below, is almost identical to the poorly miscible acrylate monomer taught by JP '240.



wherein u is an integer of 0 to 6; and v is an integer of 4 to 18.

Randomly reconstructing the prior art to find similar monomers among the prior art does not provide sufficient reason for applying the teachings of Takiguchi '497 to JP '240, particularly since the monomers are used for different purposes.

Applicant further notes that Takiguchi '497 alone teaches away from the use of ethoxylated alkyl-phenolacrylate as a readily miscible monomer in combination with a poorly miscible monomer. Takiguchi '497 teaches that monomers (7) and (8) are a preferred combination where monomer (8) is an ethoxylated alkyl-phenolacrylate and both monomers (7) and (8) are readily miscible. Therefore, the preferred combination of formulas (7) and (8) teaches away from a combination of formula (8) with a poorly miscible monomer like formula (5). The preferred combination of readily miscible

monomers (7) and (8) also teaches away from claim 5, which recites a "second type of monomer being poorly miscible."

Additionally, Takiguchi '497 is also different from JP '240, and therefore not combinable with JP '240, because it requires that the monofunctional polymer mixture be combined with a bifunctional polymer. Takiguchi '497 does not give a single example of the invention where a monofunctional polymer mixture is used alone.

However, the examiner has ignored the fact that the mixture of monofunctional acrylate monomers is intended to be combined with a bifunctional acrylate monomer to achieve all the characteristics of the Takiguchi '497 invention. Because the characteristics of the obtained liquid crystal/prepolymer composition are also dependent on the bifunctional acrylate monomer, which is not a factor in the claimed invention, Takiguchi '497 does not provide a reason to believe that a monofunctional acrylate mixture alone would be useful in the claimed invention.

Also, in citing Takiguchi '497 for teaching one monomer with poor miscibility and one monomer with good miscibility, it is believed that the examiner has misplaced the teaching out of context in an attempt to reconstruct the prior art. Takiguchi '497 is not concerned with providing a monomer of good miscibility and a monomer of poor miscibility for the final composition of a liquid crystal polymer composition. Instead Takiguchi '497 is only concerned with a combination of monomer components, wherein the range of HLB values for the components result in particular light dispersion properties. (col. 4, lines 42-64).

The required range of HLB values for each monomer component covers monomers that have poor miscibility or good miscibility. The monofunctional monomer component can have very poor miscibility at an HLB value of 2.5 or better miscibility at

an HLB value of 7. The bifunctional monomer component can have very poor miscibility at an HLB value of 3.5 or better miscibility at an HLB value of 11. Takiguchi '497 only teaches the mixture of one monofunctional monomer with good miscibility and one monofunctional monomer with poor miscibility to demonstrate that combined monofunctional monomers of a monofunctional monomer component may vary in HLB value so long as the final HLB value of the monofunctional monomer component is within the pre-selected range of HLB values.

Therefore, Takiguchi '497 teaches a liquid crystal/prepolymer composition in which both monomer components can simultaneously have good miscibility at HLB values of 7 and 11 respectively, or poor miscibility at HLB values of 2.5 and 3.5 respectively. Takiguchi '497 fails to teach or suggest a final liquid crystal polymer composition in which one monomer component must have poor miscibility and another monomer component must have good miscibility.

Accordingly, claims 6 and 7 are not obvious from JP '240 in view of Takiguchi '497.

Therefore, the application and claims are believed to be in condition for allowance, and favorable action is respectfully requested. No new matter has been added.

If any issues remain which may be resolved by telephonic communication, the Examiner is respectfully invited to contact the undersigned at the number below, if such will advance the application to allowance.

Favorable action is respectfully requested.

Respectfully submitted,

  
\_\_\_\_\_  
Yan Glickberg  
Reg. No. 51,742  
Attorney for Applicants  
(845) 359-7700

Dated: September 10, 2003

**NOTARO & MICHALOS P.C.**  
100 Dutch Hill Road, Suite 110  
Orangeburg, New York 10962-2100

**Customer No. 21706**